FIG. 1

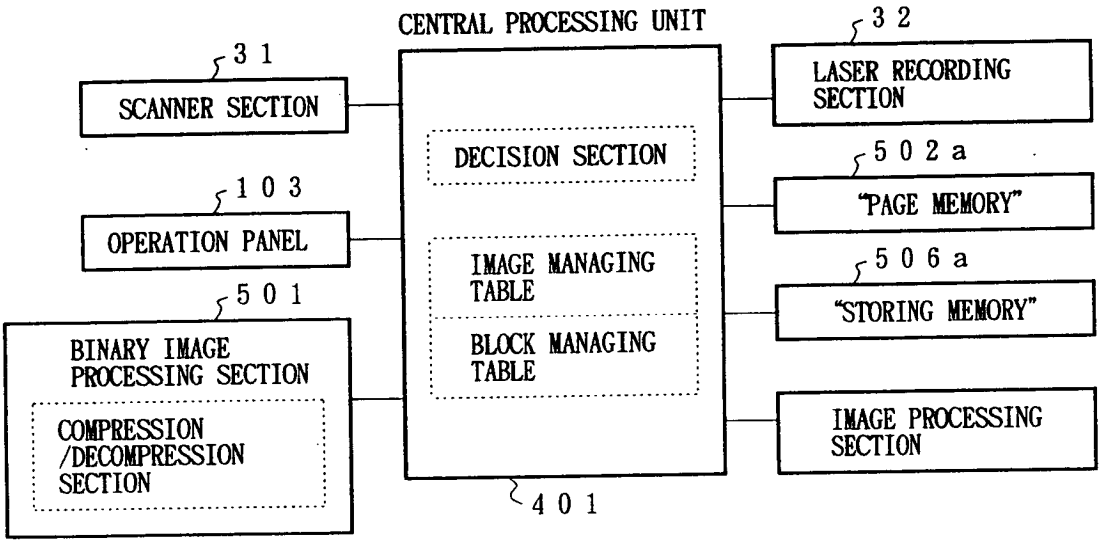

CENTRAL PROCESSING UNIT
31
SCANNER SECTION
103
OPERATION PANEL
501
BINARY IMAGE PROCESSING SECTION
COMPRESSION /DECOMPRESSION SECTION
DECISION SECTION
IMAGE MANAGING TABLE
BLOCK MANAGING TABLE
401
32
LASER RECORDING SECTION
502a
"PAGE MEMORY"
506a
"STORING MEMORY"
IMAGE PROCESSING SECTION

FIG. 2

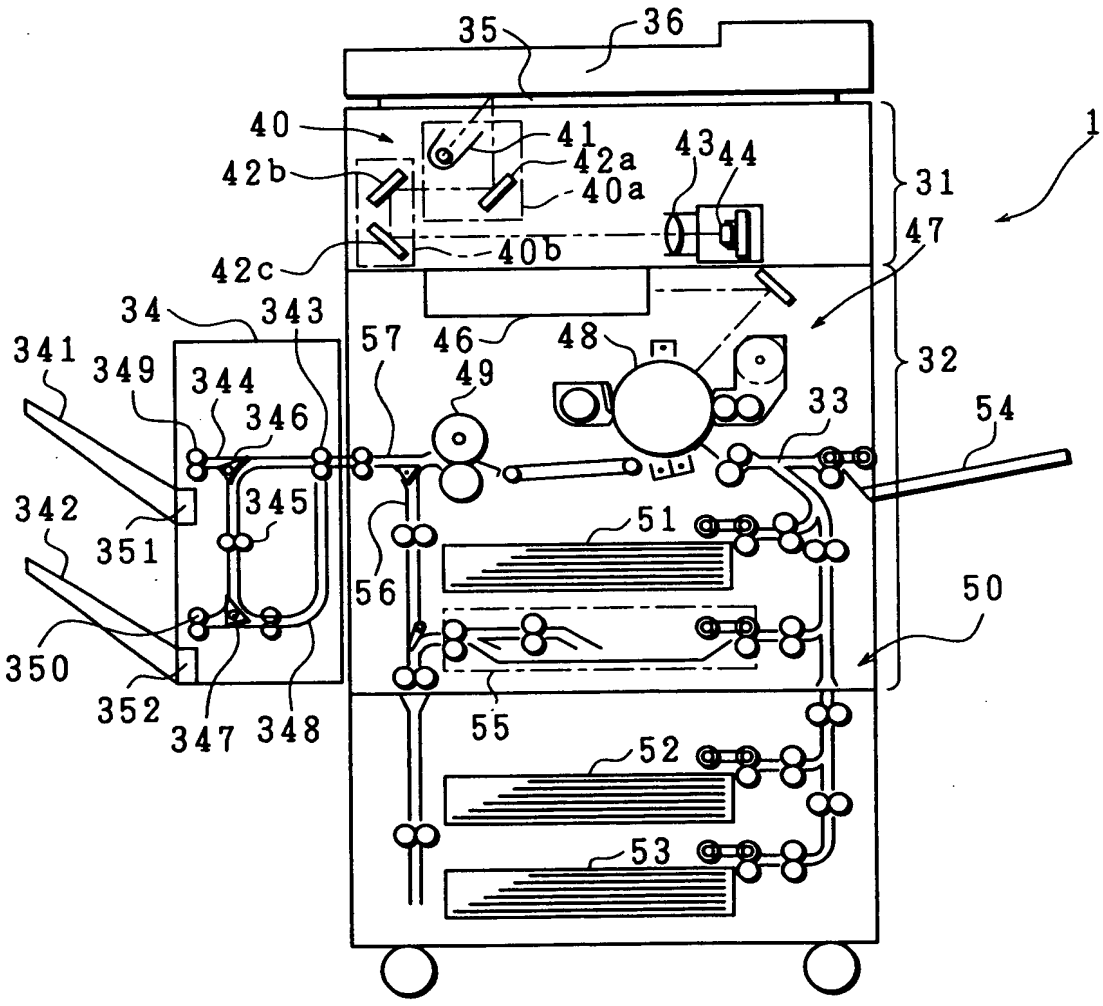

35
36
40
41
42a
43
44
42b
40a
1
31
42c
40b
47
34
343
57
46
48
32
341
349
344
49
33
54
346
342
345
51
351
56
50
350
352
347
348
55
52
53

FIG. 3

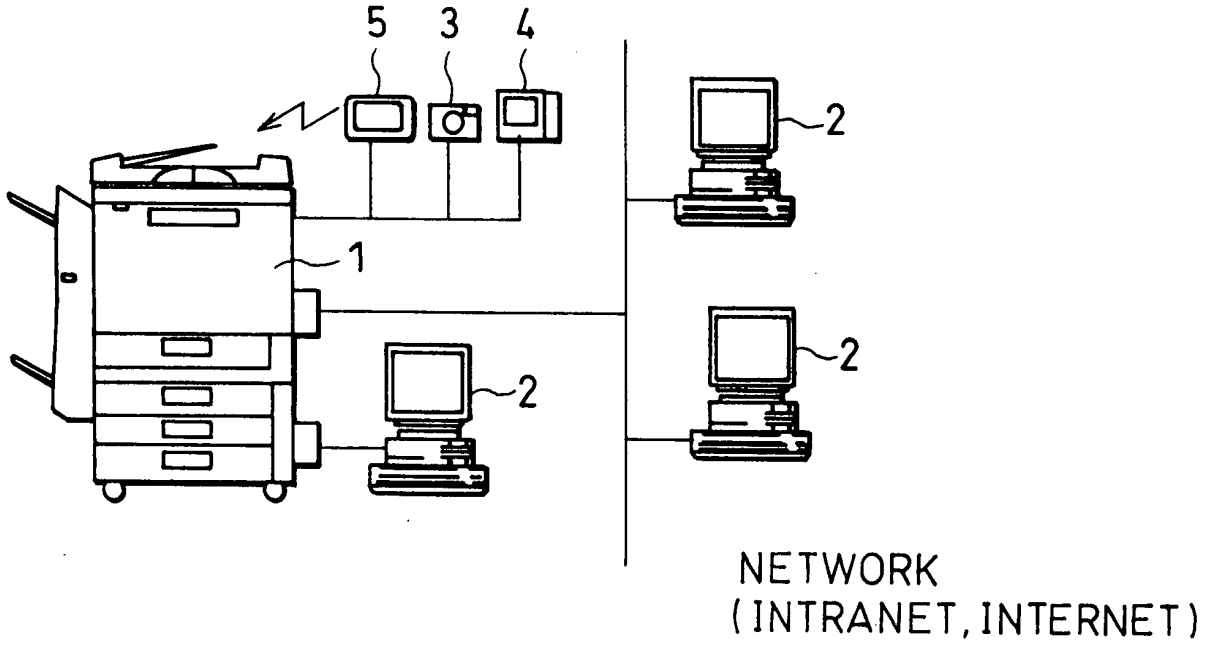


FIG. 4

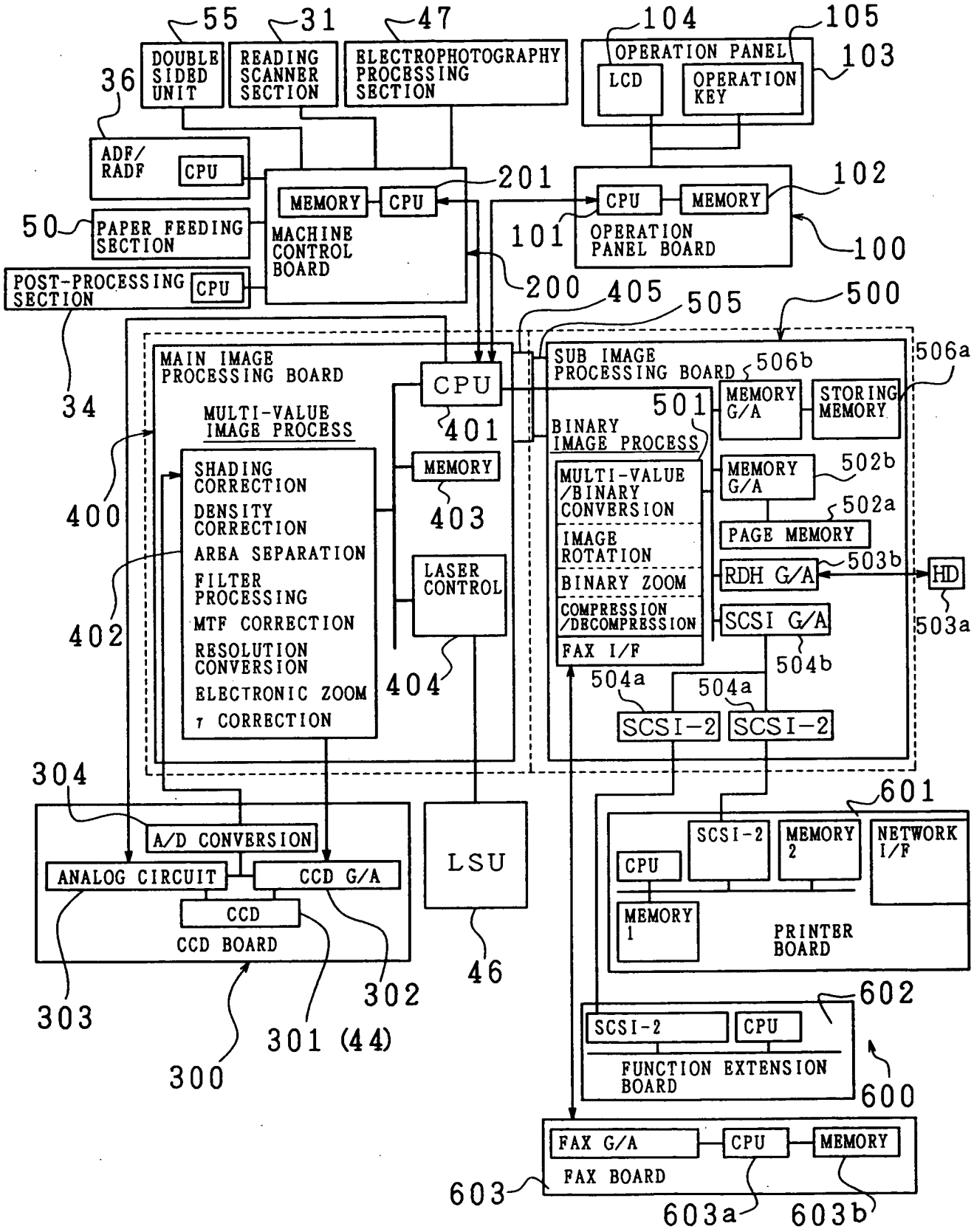

55
31
47
104
105
DOUBLE SIDED UNIT
READING SCANNER SECTION
ELECTROPHOTOGRAPHY PROCESSING SECTION
OPERATION PANEL
LCD
OPERATION KEY
103
36
ADF/ RADF
CPU
201
MEMORY
CPU
CPU
MEMORY
102
50
PAPER FEEDING SECTION
MACHINE CONTROL BOARD
101
OPERATION PANEL BOARD
100
POST-PROCESSING SECTION
CPU
200
405
505
500
MAIN IMAGE PROCESSING BOARD
CPU
SUB IMAGE PROCESSING BOARD
506b
506a
MULTI-VALUE IMAGE PROCESS
401
501
MEMORY G/A
STORING MEMORY
BINARY IMAGE PROCESS
34
400
SHADING CORRECTION
DENSITY CORRECTION
AREA SEPARATION
FILTER PROCESSING
MTF CORRECTION
RESOLUTION CONVERSION
ELECTRONIC ZOOM
γ CORRECTION
MEMORY
403
LASER CONTROL
MULTI-VALUE /BINARY CONVERSION
IMAGE ROTATION
BINARY ZOOM
COMPRESSION /DECOMPRESSION
FAX I/F
MEMORY G/A
502b
PAGE MEMORY
502a
RDH G/A
503b
HD
SCSI G/A
503a
504b
402
404
504a
504a
SCSI-2
SCSI-2
304
601
A/D CONVERSION
SCSI-2
MEMORY 2
NETWORK I/F
ANALOG CIRCUIT
CCD G/A
LSU
CPU
CCD
MEMORY 1
PRINTER BOARD
CCD BOARD
303
302
46
602
SCSI-2
CPU
FUNCTION EXTENSION BOARD
600
301 (44)
300
FAX G/A
CPU
MEMORY
FAX BOARD
603
603a
603b

FIG.5

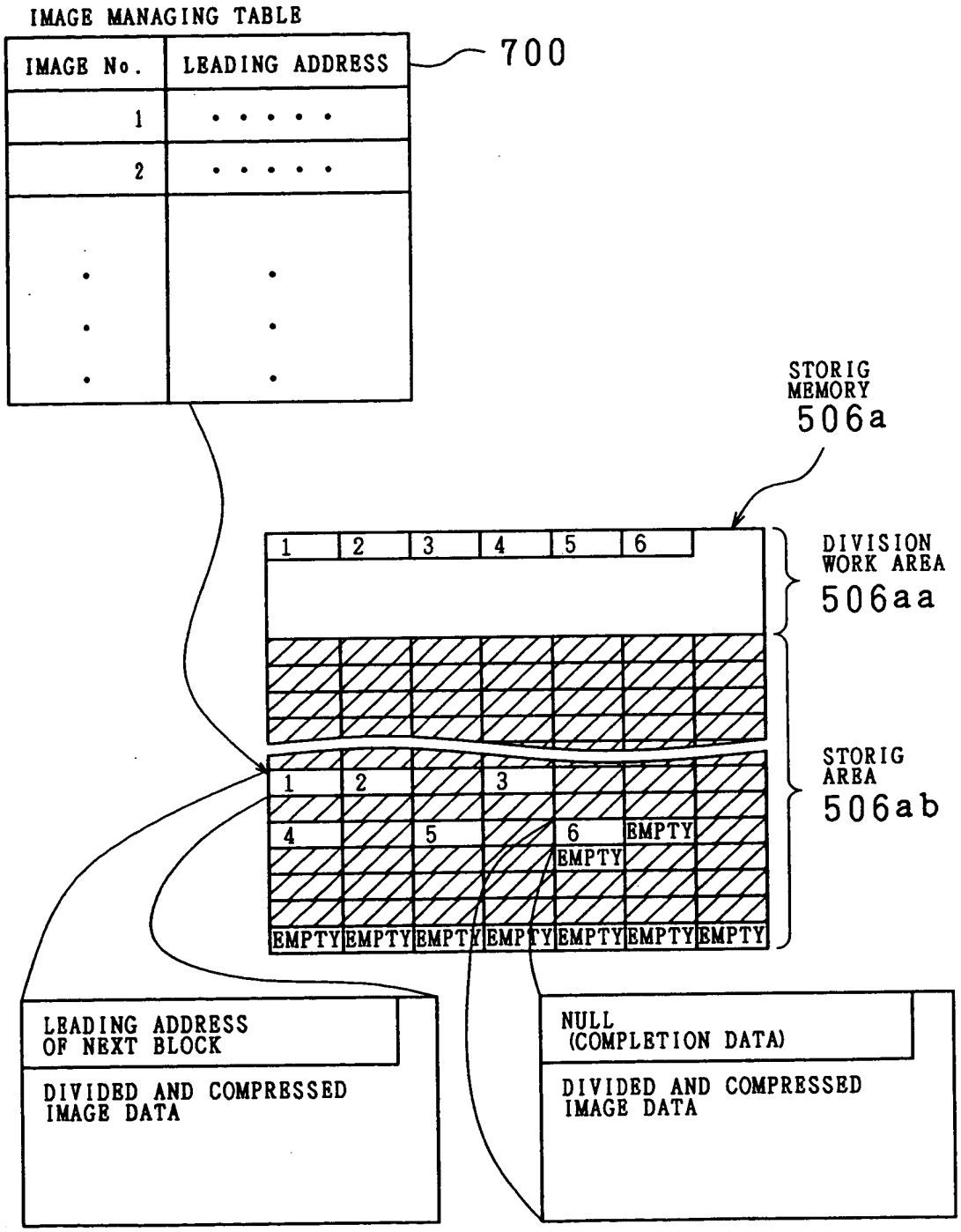


IMAGE MANAGING TABLE
IMAGE No.
LEADING ADDRESS
700
1
2
STORIG MEMORY
506a
1
2
3
4
5
6
DIVISION WORK AREA
506aa
STORIG AREA
506ab
EMPTY
LEADING ADDRESS OF NEXT BLOCK
DIVIDED AND COMPRESSED IMAGE DATA
NULL (COMPLETION DATA)
DIVIDED AND COMPRESSED IMAGE DATA

FIG. 6 (a)

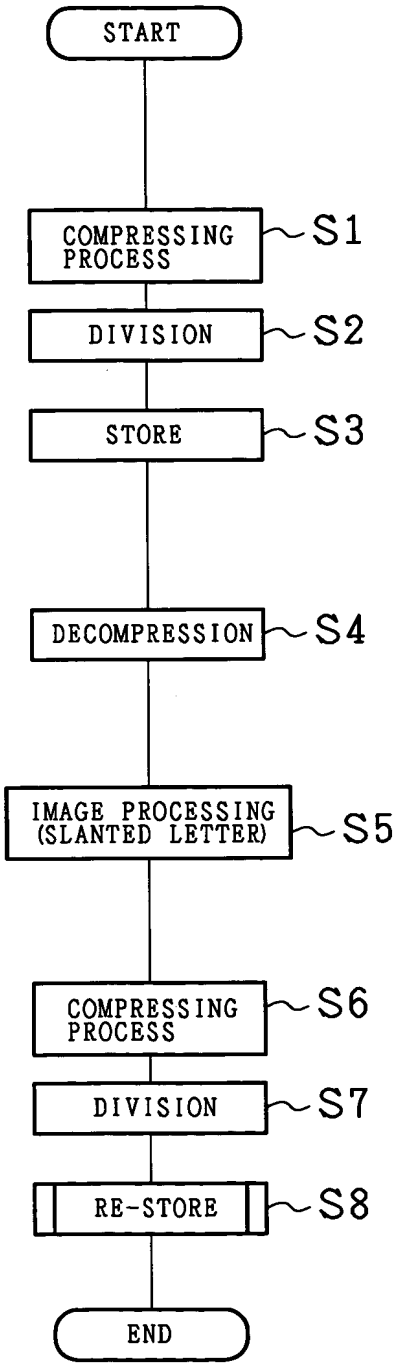

START
COMPRESSING PROCESS
S1
DIVISION
S2
STORE
S3
DECOMPRESSION
S4
IMAGE PROCESSING (SLANTED LETTER)
S5
COMPRESSING PROCESS
S6
DIVISION
S7
RE-STORE
S8
END

FIG. 6 (b)

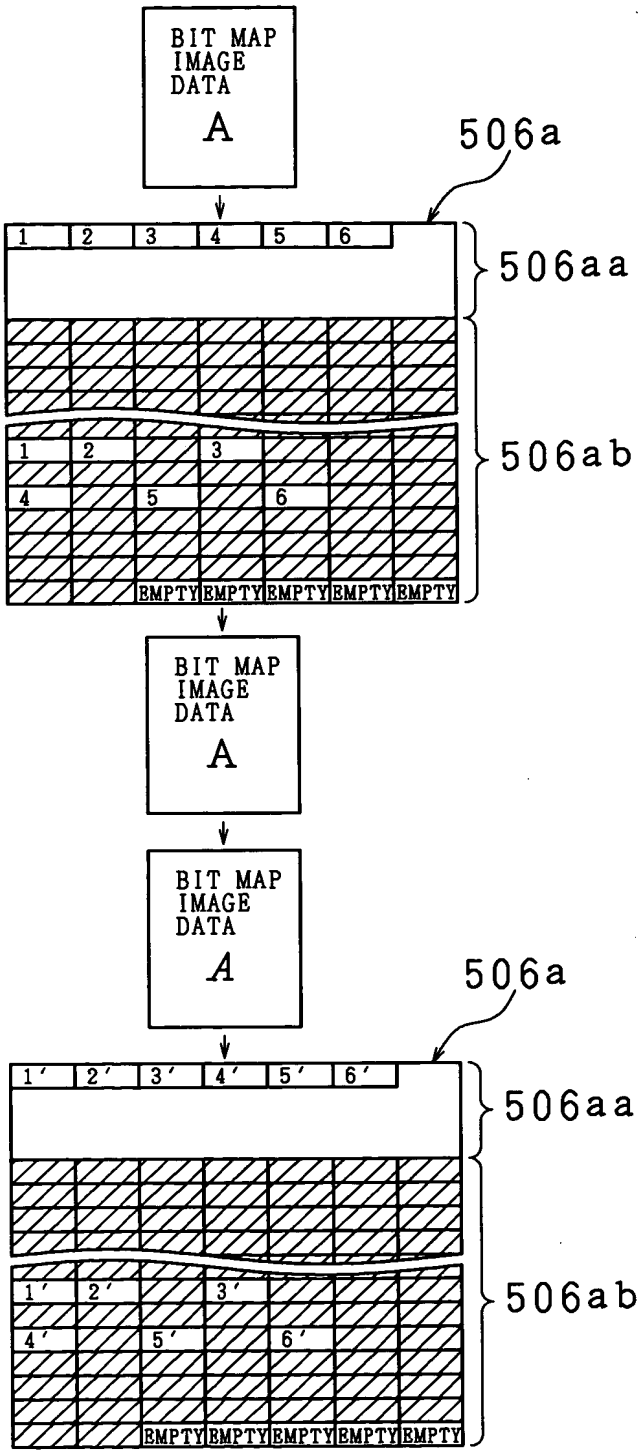

BIT MAP IMAGE DATA
A
506a
1
2
3
4
5
6
506aa
506ab
EMPTY
BIT MAP IMAGE DATA
A
BIT MAP IMAGE DATA
A
506a
1′
2′
3′
4′
5′
6′
506aa
506ab
EMPTY

FIG. 7

BLOCK MANAGING TABLE: 701

BLOCK No.	EMPTY STATE
1	0
2	1
3	0
4	1
5	1
6	0
7	1
8	1
9	1
・ ・ ・	・ ・ ・

* 0: DATA PRESENT
  1: NO DATA

FIG. 8

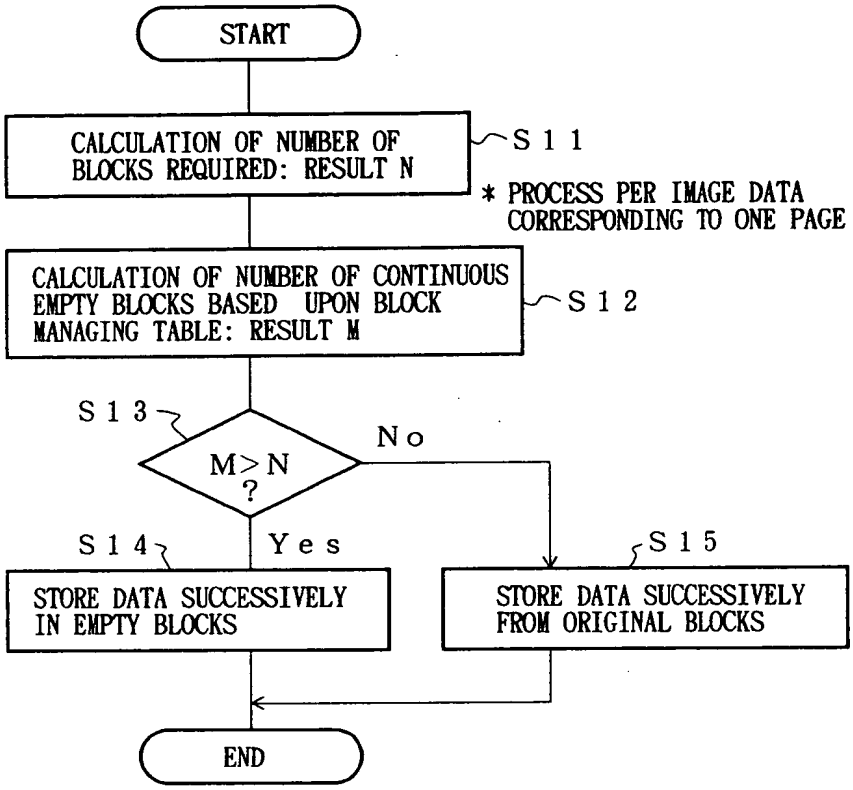

START
CALCULATION OF NUMBER OF BLOCKS REQUIRED: RESULT N
S11
* PROCESS PER IMAGE DATA CORRESPONDING TO ONE PAGE
CALCULATION OF NUMBER OF CONTINUOUS EMPTY BLOCKS BASED UPON BLOCK MANAGING TABLE: RESULT M
S12
S13
M>N ?
No
Yes
S14
STORE DATA SUCCESSIVELY IN EMPTY BLOCKS
S15
STORE DATA SUCCESSIVELY FROM ORIGINAL BLOCKS
END

FIG. 9

BLOCK MANAGING TABLE: 702

BLOCK No.	EMPTY STATE	CONTINUITY
1	0	0
2	1	1
3	0	0
4	1	2
5	1	—
6	0	0
7	1	6
8	1	—
9	1	—
⋮	⋮	⋮

* EMPTY STATE 0: DATA PRESENT
1: NO DATA
CONTINUITY NUMBER OF CONTINUOUS EMPTY BLOCKS

FIG. 10

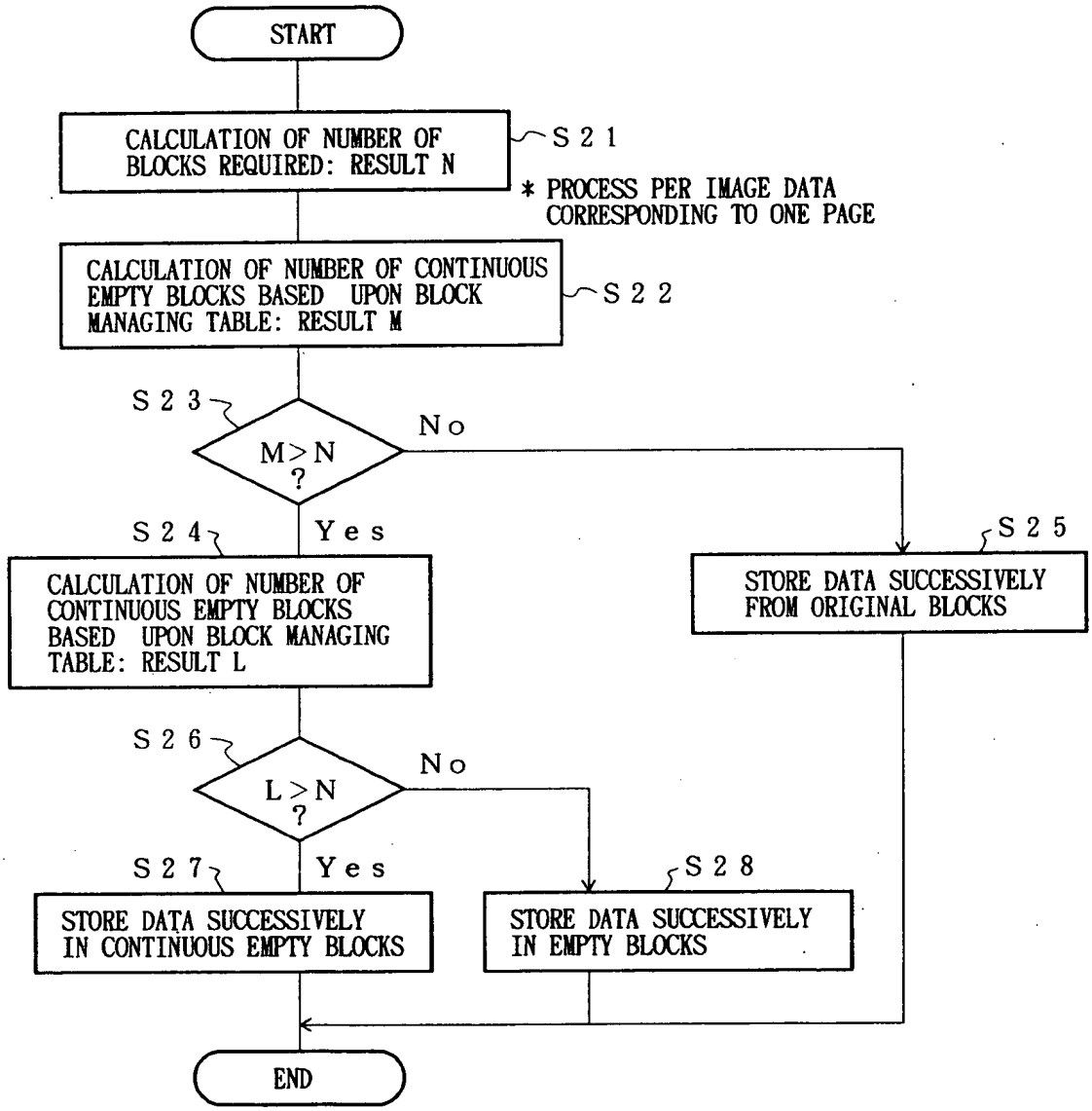

START
CALCULATION OF NUMBER OF BLOCKS REQUIRED: RESULT N
S21
* PROCESS PER IMAGE DATA CORRESPONDING TO ONE PAGE
CALCULATION OF NUMBER OF CONTINUOUS EMPTY BLOCKS BASED UPON BLOCK MANAGING TABLE: RESULT M
S22
S23
M>N ?
No
Yes
S24
CALCULATION OF NUMBER OF CONTINUOUS EMPTY BLOCKS BASED UPON BLOCK MANAGING TABLE: RESULT L
S25
STORE DATA SUCCESSIVELY FROM ORIGINAL BLOCKS
S26
L>N ?
No
Yes
S27
STORE DATA SUCCESSIVELY IN CONTINUOUS EMPTY BLOCKS
S28
STORE DATA SUCCESSIVELY IN EMPTY BLOCKS
END

FIG. 11

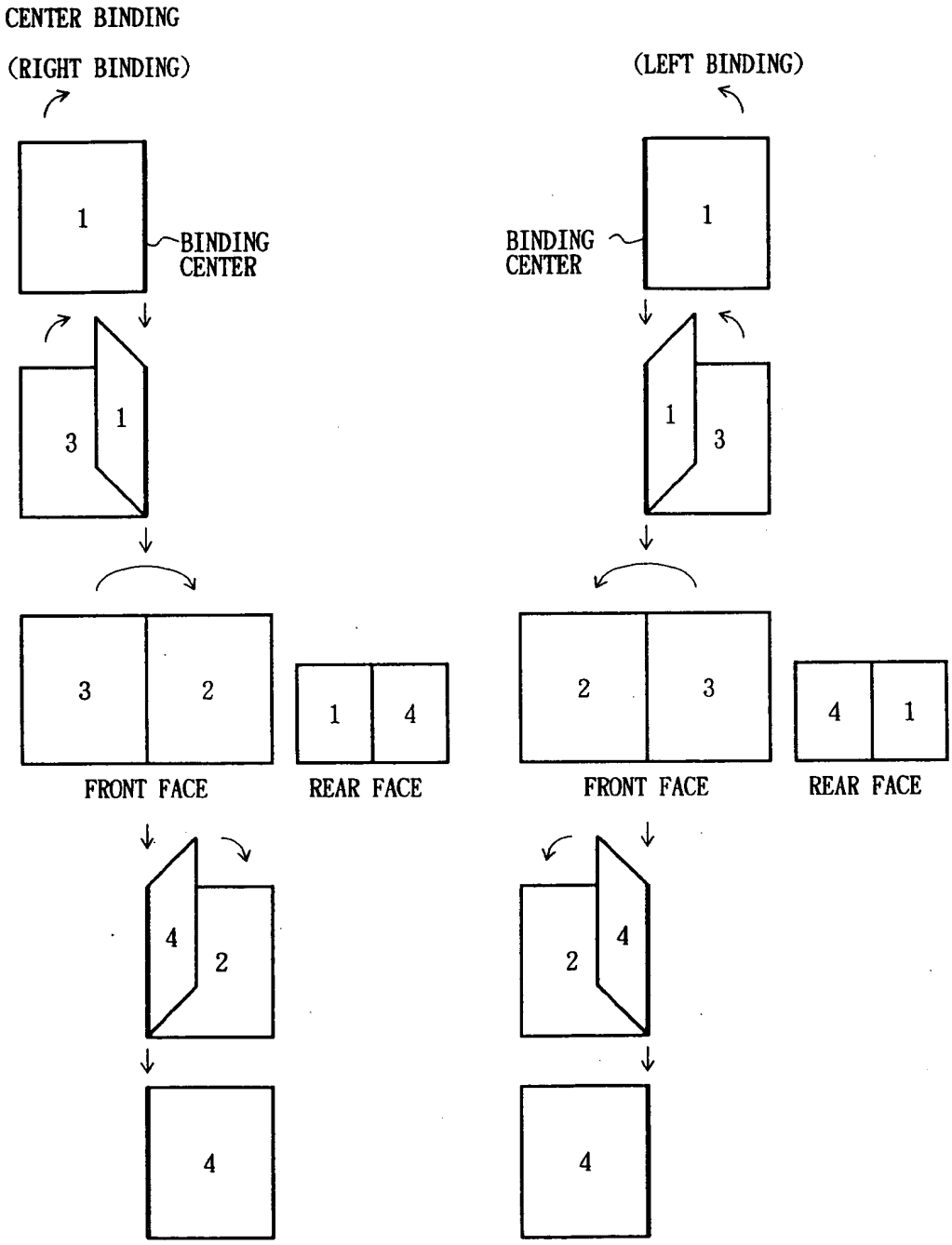

CENTER BINDING
(RIGHT BINDING)
1
BINDING CENTER
3
1
3
2
1
4
FRONT FACE
REAR FACE
4
2
4
(LEFT BINDING)
BINDING CENTER
1
1
3
2
3
4
1
FRONT FACE
REAR FACE
2
4
4

FIG. 12

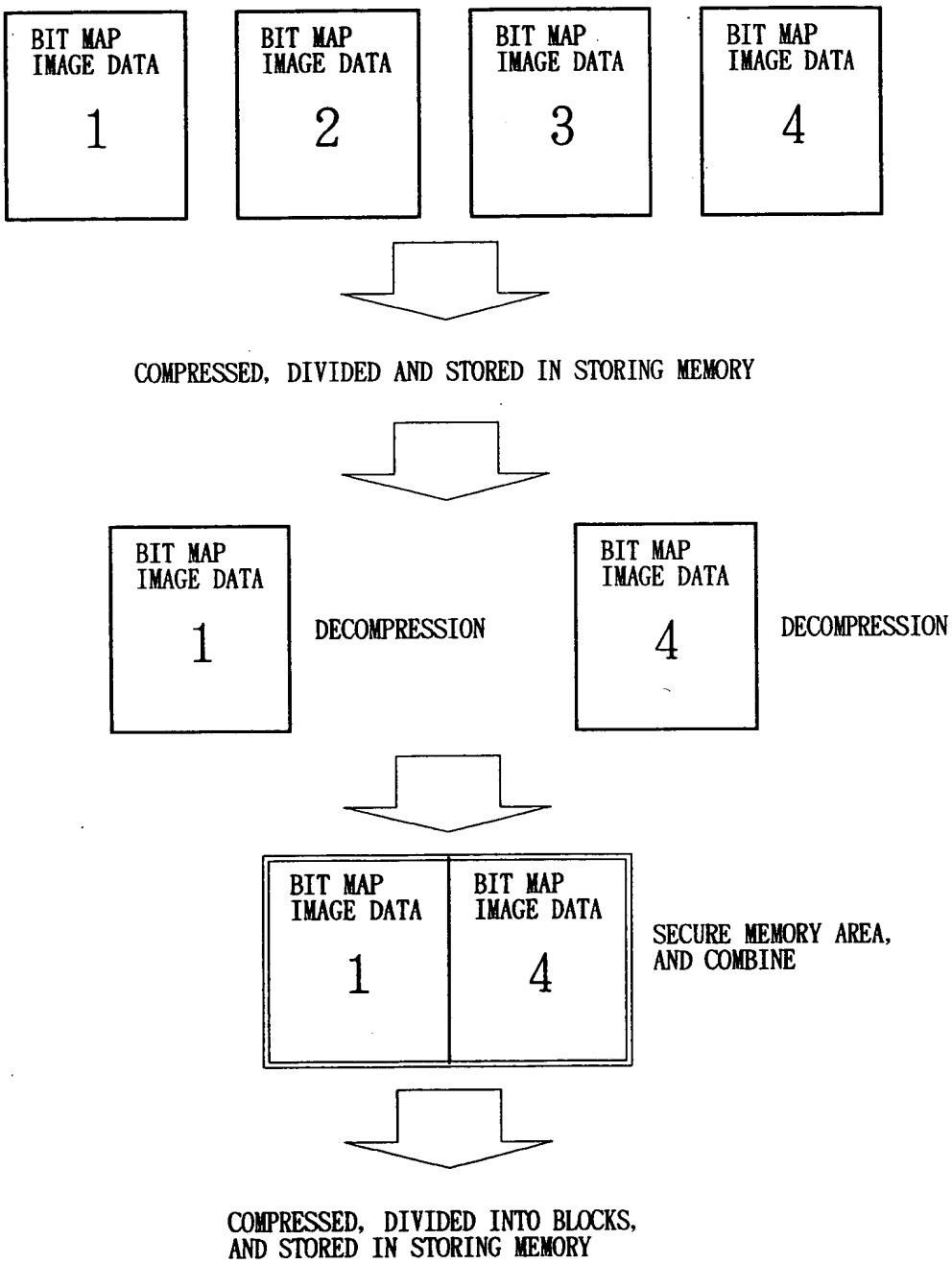

BIT MAP IMAGE DATA 1
BIT MAP IMAGE DATA 2
BIT MAP IMAGE DATA 3
BIT MAP IMAGE DATA 4
COMPRESSED, DIVIDED AND STORED IN STORING MEMORY
BIT MAP IMAGE DATA 1
DECOMPRESSION
BIT MAP IMAGE DATA 4
DECOMPRESSION
BIT MAP IMAGE DATA 1
BIT MAP IMAGE DATA 4
SECURE MEMORY AREA, AND COMBINE
COMPRESSED, DIVIDED INTO BLOCKS, AND STORED IN STORING MEMORY

FIG. 13

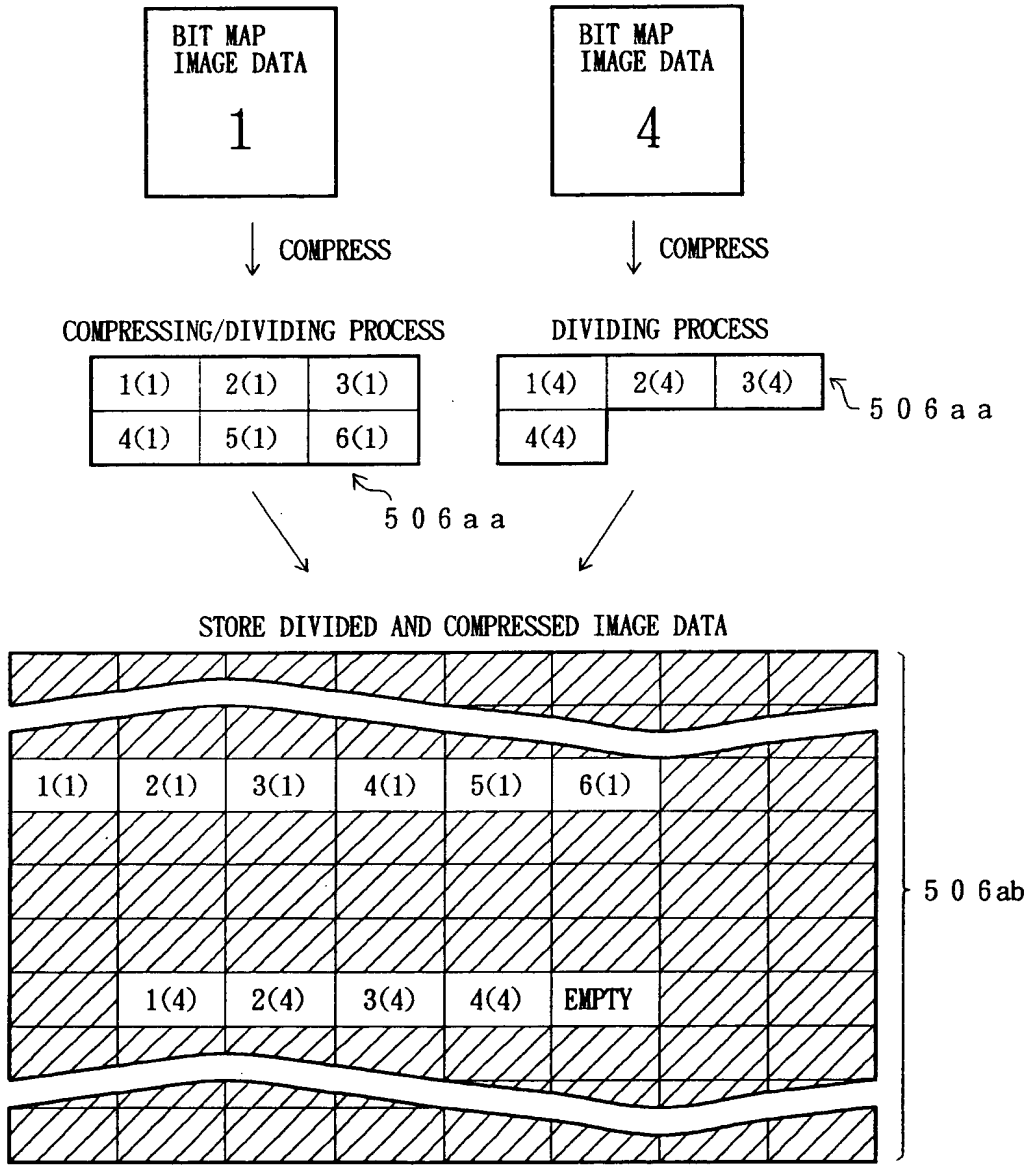

BIT MAP IMAGE DATA
1
BIT MAP IMAGE DATA
4
COMPRESS
COMPRESS
COMPRESSING/DIVIDING PROCESS
DIVIDING PROCESS
1(1) 2(1) 3(1)
4(1) 5(1) 6(1)
1(4) 2(4) 3(4)
4(4)
506aa
506aa
STORE DIVIDED AND COMPRESSED IMAGE DATA
1(1) 2(1) 3(1) 4(1) 5(1) 6(1)
1(4) 2(4) 3(4) 4(4) EMPTY
506ab

FIG. 14

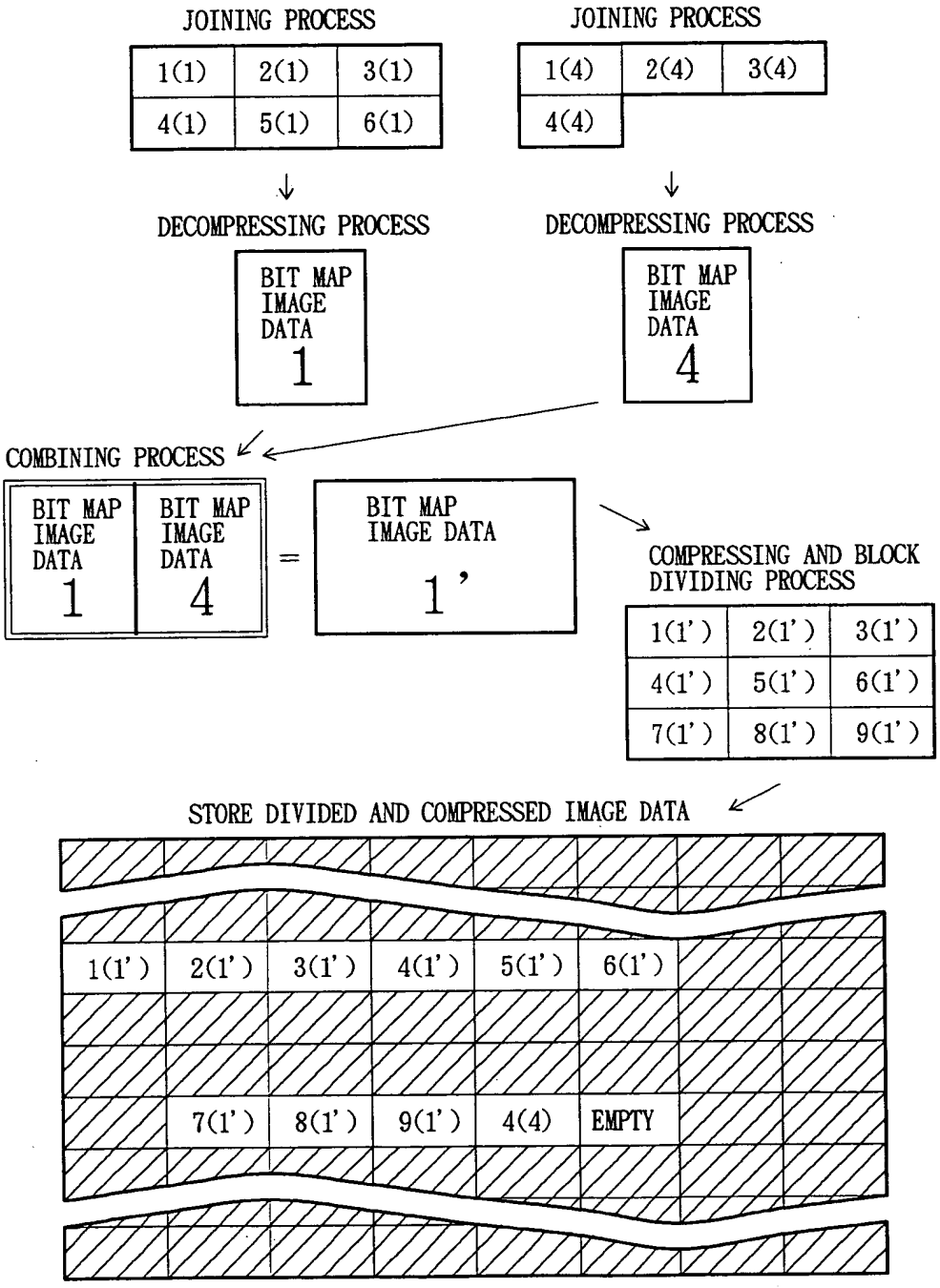
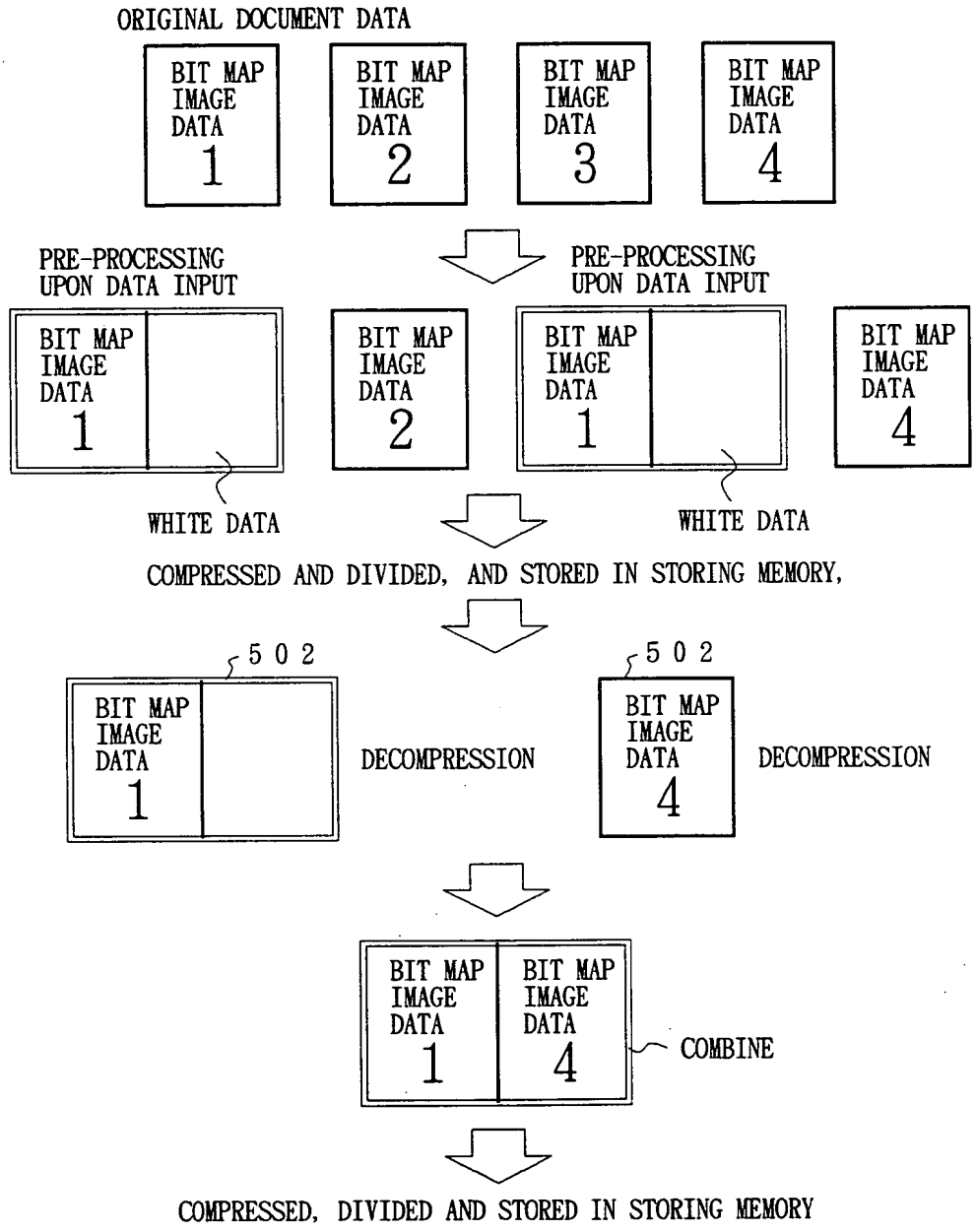

JOINING PROCESS
1(1) 2(1) 3(1)
4(1) 5(1) 6(1)
JOINING PROCESS
1(4) 2(4) 3(4)
4(4)
DECOMPRESSING PROCESS
BIT MAP IMAGE DATA 1
DECOMPRESSING PROCESS
BIT MAP IMAGE DATA 4
COMBINING PROCESS
BIT MAP IMAGE DATA 1
BIT MAP IMAGE DATA 4
=
BIT MAP IMAGE DATA 1'
COMPRESSING AND BLOCK DIVIDING PROCESS
1(1') 2(1') 3(1')
4(1') 5(1') 6(1')
7(1') 8(1') 9(1')
STORE DIVIDED AND COMPRESSED IMAGE DATA
1(1') 2(1') 3(1') 4(1') 5(1') 6(1')
7(1') 8(1') 9(1') 4(4) EMPTY

FIG. 15


ORIGINAL DOCUMENT DATA
BIT MAP IMAGE DATA 1
BIT MAP IMAGE DATA 2
BIT MAP IMAGE DATA 3
BIT MAP IMAGE DATA 4
PRE-PROCESSING UPON DATA INPUT
PRE-PROCESSING UPON DATA INPUT
BIT MAP IMAGE DATA 1
BIT MAP IMAGE DATA 2
BIT MAP IMAGE DATA 1
BIT MAP IMAGE DATA 4
WHITE DATA
WHITE DATA
COMPRESSED AND DIVIDED, AND STORED IN STORING MEMORY,
502
502
BIT MAP IMAGE DATA 1
DECOMPRESSION
BIT MAP IMAGE DATA 4
DECOMPRESSION
BIT MAP IMAGE DATA 1
BIT MAP IMAGE DATA 4
COMBINE
COMPRESSED, DIVIDED AND STORED IN STORING MEMORY